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The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 62

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROGER F. BAINES

Appeal No. 2001-0648
Application No. 07/702,615

ON BRIEF

JAN 31 2001
PAT. & TM. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Before HAIRSTON, KRASS, and FLEMING, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 48, 51-58, 60-67, 72, 75-79 and 93, all of the remaining claims.

The invention is directed to an electric motor having a brush assembly. The brush assembly has support arms being

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connected in parallel and each arm carries a respective brush body, each body contacting a motor commutator. The support arms have different respective resiliencies and are made of different materials so as to have different frequencies. Such an arrangement is alleged to provide for an improved electrical contact since, at a motor resonant frequency corresponding to a resonant frequency of one brush, the motor speed resonant frequency will not correspond to the resonant frequency of the other brush and the other brush will be less likely to lose contact with the commutator.

Representative independent claim 48 is reproduced as follows:

48. An electric motor brush assembly for being mounted in a DC electric motor, comprising:

first and second resilient, electrically conductive support arms arranged for being axially spaced from each other with respect to a longitudinal axis of said DC electric motor when said assembly is mounted in the motor,

the support arms being connected electrically in parallel,

each arm carrying a respective brush body, said brush bodies being arranged for contacting a generally cylindrical commutator of the motor,

the commutator having a plurality of circumferential segments and the first and second brush bodies being capable of contacting a single one of said segments simultaneously when the assembly is mounted in the motor,

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each arm in combination with the respective brush body thereof having a different respective natural resonance frequency of oscillation;

wherein said first and second support arms have different respective resiliencies so as to have said different frequencies;

wherein parts of said first and second support arms are made of different materials so as to provide said different respective resiliencies.

The examiner relies on the following references:

Mabuchi	4,705,978	Nov. 10, 1987
(Japanese Patents) ¹		
Kato	59-30672	Feb. 25, 1984
Kojima	59-230450	Dec. 25, 1984
Takeshita	62-293953	Dec. 21, 1987

Claims 48, 51-58, 60-67, 72, 75-79 and 93 stand rejected under 35 U.S.C. 103. As evidence of obviousness, the examiner cites Mabuchi, Kojima and Takashita with regard to all claims except for claim 93. With regard to claim 93, the examiner cites Mabuchi and Kato.

Reference is made to the brief (Paper No. 58) and the answer (Paper No. 59) for the respective positions of appellant and the examiner.

¹Our understanding of the Japanese references is based on English translations thereof prepared by the United States Patent and Trademark Office. A copy of these translations are attached hereto.

OPINION

At the outset, we note that in accordance with appellant's grouping of the claims, at page 4 of the brief, claims 48, 51-58, 60-67, 72 and 75-79 will stand or fall together and claim 93 will stand or fall alone.

We further note that while the appendix to the brief shows claim 53 depending from a nonexistent claim 43, claim 53 should depend from claim 48.

Turning first to claim 48, the examiner takes the position that Mabuchi teaches a motor having two sets of diametrically opposed brush assemblies wherein each assembly has two brushes 1 contacting the same segment 4 of a cylindrical commutator. The examiner identifies each brush as having a brush body 1 and a support arm 2. However, the examiner recognizes that Mabuchi does not disclose that each support arm is of a different resonant frequency due to different materials. Thus, the examiner turns to Kojima for a teaching of brush arms with different weights due to different dimensions. The examiner contends that it is "inherent" [answer-page 4] that the different brush arms cause a reliable brush contact with the commutator. However, the examiner recognizes that Kojima does not teach

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making the brush arms of different materials. The examiner turns to Takeshita for a teaching of "the equivalency of different size brushes, brushes of different materials, and a slit in one of the brushes to change the resonant frequency between two brush arms" [answer-page 4].

The examiner concludes that it would have been obvious to construct the motor of Mabuchi with brush arms having different resonant frequencies due to different materials in the brush arms because Kojima teaches "that different resonant frequencies in adjacent brushes reduces (sic) noise and unequal rotation in a motor and because [Takeshita] teaches the equivalence of changing the resonance frequency in two brush arms by different size brush arms, different materials in the brush arms, and a slot in one of the brush arms, where selection of know (sic, known) equivalents is within the ordinary skill in the art" [answer-page 4].

Appellant contends that Mabuchi does not have a brush body, as contended by the examiner because Mabuchi is directed to fingerleaf brushes while the instant claims are directed to a brush assembly of the type having support arms with "each arm carrying a respective brush body..." The remainder of appellant's argument is that while the instant claimed invention is directed to carbon leaf brushes, Mabuchi is directed to

fingerleaf brushes and that the skilled artisan would not assume that an advance in fingerleaf brushes would be applicable to carbon leaf brushes as well.

The examiner has particularly pointed out that, in Mabuchi, brush shoe 1 is considered to be a "brush body," as claimed, and brush arm 2 is considered to be a "support arm, as claimed. We find this to be a reasonable assessment.

Appellant contends that Mabuchi does not have a "brush body," but, in view of the examiner's identification of a brush body at element 1 of Mabuchi, appellant must show why this is not a "brush body," as claimed. Appellant attempts to do this by arguing, at length, the differences between carbon leaf brushes, alleged as being the type claimed, and fingerleaf brushes, alleged as being the type disclosed by Mabuchi.

We note, as did the examiner [answer-page 6], that the instant claims are not limited to "carbon leaf" brushes. The claims do not preclude fingerleaf brushes even if appellant's alleged distinction between these two types of brushes is accurate. Accordingly, appellant's arguments directed to carbon leaf brushes are unpersuasive of nonobviousness.

Since appellant makes no further arguments regarding the patentability of the instant claimed subject matter, we will

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sustain the rejection of claims 48, 51-58, 60-67, 72 and 75-79 under 35 U.S.C. 103.

Regarding the rejection of claim 93 under 35 U.S.C. 103, the examiner sets forth the rationale for this rejection at page 5 of the answer. Appellant's sole argument [brief-pages 6-7] is, again, directed to the difference between carbon leaf and fingerleaf brushes. However, this is unpersuasive of nonobviousness of the instant claimed subject matter because claim 93 does not recite "carbon leaf brushes" in any manner.

We would also point out that while appellant contends that, with regard to the argument relative to claims 48, 51-58, 60-67, 72 and 75-79, "Mabuchi is directed to fingerleaf brushes" [brief-page 4], appellant then states, with regard to the rejection of claim 93, that "JP '672, like Mabuchi '450 and Mabuchi '953, is directed to carbon leaf brushes rather than finger leaf brushes" [brief-bottom of page 6]. Thus, unless there has been a typographical error in this latter citation, it appears that appellant is arguing both ways.

In any event, since appellant's arguments do not persuade us of an error in the examiner's prima facie case of obviousness, we will sustain the rejection of all the claims under 35 U.S.C. 103.


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The examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

~~Kenneth W. Hairston~~
KENNETH W. HAIRSTON
Administrative Patent Judge


ERROL A. KRASS
Administrative Patent Judge

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Michael R. Fleming
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